

Clinical, Gross and Histopathological Studies of Coccidial Infection in Chicken

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ABSTRACT

The studies were undertaken to observe the clinical, gross and histopathological changes in poultry birds suffering from coccidiosis. The symptoms included loss of appetite, unthriftiness, greenish or reddish diarrhoea. Affected birds were mostly found showing their comb and wattles pale and anaemic. Postmortem revealed intestine extremely ballooned, having petechial haemorrhages, oedematous, necrosis and sloughing of intestinal and caecal epithelium. Histological evidence showed leakage of blood, oedema, necrosis, disruption and loss of villi.

Key Words: Coccidiosis; Pathology; Chicken

INTRODUCTION

Avian coccidiosis is classified into caecal and intestinal forms. Caecal coccidiosis is an acute disease characterized by diarrhoea and massive caecal haemorrhages. It is caused by *Eimeria tenella* (Gardinar, 1955). Similarly, intestinal coccidiosis is caused by *E. necatrix* (Johnson, 1930). It has further been reported as the most common pathogenic and chronic form occurring in the domestic poultry among all these species. In this form, lesions are distributed throughout the length of the intestine, but, most common in the middle portion of the small intestine. In acute form, severe unclotted blood may be observed. As far as the literature is available, little work has been done on the pathology of coccidiosis in the province of Sindh. Present studies were, therefore, proposed to determine the gross pathology and clinical evidence of various forms of the disease in poultry with the re-description of the syndrome and special emphasis on differential characteristics in each form.

MATERIALS AND METHODS

The findings reported herein this study are a part of survey carried out to record the incidence of coccidiosis in poultry at different commercial poultry farms. During the visit of poultry farms, it was tried to find out the sick birds in the flock, in which, the symptoms and morbidity were noted.

In case of dead birds, postmortem was conducted and the lesions were recorded and fresh faecal smears from the intestinal contents were prepared and examined for oocysts and sporozoites.

Histology. For histopathological changes, morbid tissues from the intestine and caeca were fixed in 10% formal saline solution. These tissues were processed with ascending grades of ethyl alcohol to prepare fine blocks in paraffin wax. Sections were taken at 6-8 μ and slides were stained

with Hematoxylin and Eosin stains.

RESULTS AND DISCUSSION

Clinical picture. The symptoms were observed and recorded individually in all the sick birds. The syndrome of symptoms thus recorded, included loss of appetite, unthriftiness, greenish or reddish diarrhoea, huddling together, heads drawn in and ruffled feathers. Besides, weakness, emaciation and inability to stand were evidently recorded at three out of 12 farms. The affected birds were mostly found showing their comb and wattles pale and anaemic.

Post-mortem lesions (gross pathology). Coccidiosis was determined through demonstration of post mortem lesions recorded in dead birds. The post mortem revealed the lesions of intestinal and caecal forms of coccidiosis. In case of intestinal form, extremely ballooned intestine, and petechial haemorrhages could be easily seen while looking grossly without opening the gut. However, discrete haemorrhagic spots were also observed on the mucous membrane of intestine when opened. Intestine was often found oedematous, thickened, showing necrosis and sloughing of intestinal epithelium and friable. The findings thus recorded coincide with those of Tyzzer (1929), Johnson (1930) and Davis (1963).

In case of caecal coccidiosis, enlargement of caecum with clotted blood, haemorrhagic or whitish spots on caecal wall, inflammation, necrotic patches, dilation of caecum with consolidation of caecal contents were observed in almost all the cases. However, in some cases, caeca were found solid consisting caste of necrosed blood cells, epithelial cells and other debris. On opening the caeca, the bloody mass, a characteristic of caecal coccidiosis, was found in some cases. The change in colour from red to mottled reddish or milky white due to formation of oocysts were observed in some cases at various poultry farms. These findings however, correspondingly are related to those

recorded by Raillet and Lucet (1891), Fantham (1910), Tyzzer (1929) and Long (1973). They also observed enlargement of caecum with clotted blood, haemorrhages throughout caecal mucosa, thickened caeca, shortened and consistent cases of necrosed blood cells and change in colouration from reddish to milky white.

It was further observed that caecal form of infection occurred more frequently on almost all the farms except one. The rates were also calculated as 94% in case of caecal form against 6% in intestinal form (Table I).

Table I. Rates of different types of coccidiosis at various poultry farms

Name of poultry farm	No. of birds selected from positive cases	Caecal form	Intestinal form
Iqbal	6	–	6
Amin	8	8	–
Faculty of Anim. & Vet. Sci. unit	12	12	–
Ghafoor	8	8	–
Murad	8	8	–
Hyderabad	10	10	–
Sumreen	8	8	–
Shahbaz	8	8	–
Shah Bukhari	8	8	–
Rafique	8	8	–
Malik	8	8	–
Karim	8	8	–
Total	100	94 (94%)	6 (6%)

Histopathological lesions. Histopathological lesions in case of caecal form revealed loss of epithelial tissue, congestion of blood vessels which indicated disruption followed by leakage of blood, severe muscular oedema, necrosis of sub-mucosa, loss of villi, disruption of caecal

mucosa, cluster of oocysts and marked haemorrhage, necrosis of caecal mucosa and lymphoid cells showing hyperplasia. In case of intestinal forms, lesions were found in the form of complete detachment of the mucosal layer from sub-mucosal layer accompanied with the accumulation of cell debris in the intestinal lumen, and the lymphoid cells showed hyperplasia. Mononuclear cells infiltration was noted in the mucosal layer. These findings are similar to those of Rasheda and Bano (1985). They also observed oedema and erosion of the sub-mucosa, glandular tissue cells infiltration, decreased villar height in addition to caseous necrosis and fatty decomposition.

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(Received 27 April 2001; Accepted 20 August 2001)